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10/705,301	11/10/2003	Jeffery S. Beck	10992120-4	4419

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EXAMINER
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NGUYEN, LAM S

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/705,301  
Filing Date: November 10, 2003  
Appellant(s): BECK ET AL.

GEORGE H. CORRIGAN  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 02/10/2006 appealing from the Office actions mailed 08/15/2005 and 11/02/2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

A Pre-Appeal Brief Request for Review was filed on November 15, 2005. A Panel Decision was issued Jan. 11, 2006 that the application should proceed to the Board of Patent Appeals and Interferences.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

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A copy of an Office Action dated August 17, 2005 from co-pending application Serial Number 10/712,112.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1, 3, 6-8, 13, 23, 26, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohorquez (US 5357081) in view of Suzuki (US 4514737).

Bohorquez discloses a fluid ejection device comprising:

an internal power supply path (*FIG. 3: The power line with the resistor Rp*);

a power regulator (*FIG. 3, element 20*) providing an offset voltage (*FIG. 3: The voltage at the positive input of element 16*);

multiple primitives (column 1, lines 50-55: Each primitive has as many as 10-13 resistors that connect to a common return), each primitive including:

a group of nozzles (*column 1, lines 25-35*);

a corresponding group of firing resistors (*FIG. 3, element RH and column 1, lines 25-35*);

a corresponding group of switches (*FIG. 3, element 18*) controllable to couple a selected firing resistor (*FIG. 3, element RH*) of the group of firing resistors between the internal power supply path and the offset voltage to thereby permit electrical current to pass through the selected firing resistor to cause a corresponding selected nozzle to fire (*FIG. 3 and column 1, lines 25-35*).

Bohorquez does not disclose wherein the power regulator provides the offset voltage *from the internal power supply path voltage*. In other words, Bohorquez does not disclose wherein the power regulator directly connects to the internal power supply path.

Suzuki discloses a printing head driving apparatus for driving printing elements such as a coil in an impact printer (*FIG. 9-10, element 14b*) or a heating resistor in a thermal printer (*FIG. 13, element 41 and column 7, lines 25-31*). The apparatus has an internal power supply path (*FIG. 9-10, element Vcc*) and a power regulator (*FIG. 9-10, elements 29-30 or 32-33*) directly connecting to the internal power supply path *Vcc* for sensing the variation of the power supply to provide a signal for controlling the driving of printing elements in accordance to variations in the power source voltage (*FIG. 9-10: The voltage at the input of the op-amp 31*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the power regulator disclosed by Bohorquez such as the power regulator provides the offset voltage from the internal power supply path voltage or directly connects to the internal power supply path as disclosed by Suzuki. The motivation of doing so is to drive the printing elements in accordance to variations in the power source voltage in order to gain printing quality as taught by Suzuki (*column 2, lines 36-45*).

**Bohorquez also discloses the following claimed invention:**

**Referring to claims 6, 26:** an amplifier receiving an input offset voltage and providing the offset voltage (*FIG. 3, element 16*).

**Referring to claims 3, 8:** wherein each switch includes a field effect transistor (FET) (*FIG. 3: a switch element 18 comprises a transistor that is replaceable by a field effect transistor (FET) for reducing power consumed*).

**Referring to claim 7:** wherein the printhead further comprises:

an internal power ground (*FIG. 3: The power line with resistor RR*),

wherein each amplifier (*FIG. 3, element 16*) includes a first input (*FIG. 3: The positive input of element 16*) coupled to the input offset voltage, a second input (*FIG. 3: The negative input of element 16*) coupled to the offset voltage, and an output (*FIG. 3: The output of element 16*); and

wherein the power regulator further includes:

multiple transistors (*FIG. 3, element 18*), each transistor coupled between the internal power ground and the offset voltage and having a gate (*FIG. 3: The input of element 18*) coupled to the output of a corresponding amplifier.

2. Claims 2, 4, 5, 11-12, 24-25, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohorquez (US 5357081) in view of Suzuki (US 4514737), as applied to claims 1, 23, and further in view of Doluca (US 6208127).

Bohorquez, as modified, discloses the claimed invention as discussed above, except wherein the power regulator, which is a linear power regulator (**Referring to claim 2**), includes a current mode digital-to-analog converter (DAC) coupled to the internal power supply path and configured to receive a digital offset command representing a desired offset voltage from a processor to provide an analog offset voltage from the internal power supply path (**Referring to claims 4, 11-12, 24, 27**), a buffer amplifier configured to receive an analog offset voltage and to provide a buffered offset voltage (**Referring to claims 5, 25**).

Dolucas discloses a power regulator such as linear regulators (*column 1, lines 12-24*) including a current mode digital-to-analog converter (DAC) (*FIG. 3-4, elements 330, 430 and*

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*column 1, lines 35-45*) configured to receive a digital offset command (*FIG. 3-4, elements 118, 302*) representing a desired offset voltage from a processor to provide an analog offset voltage (*FIG. 3-4, element 332, 432 and column 1, lines 25-35*), a buffer amplifier configured to receive an analog offset voltage and to provide a buffered offset voltage (*FIG. 4, element 450*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the power regulator in the printing system disclosed by Bohorquez, as modified, such as including the digital-to-analog converter (DAC) configured to receive a digital offset command representing a desired offset voltage to provide an analog offset voltage as disclosed by Doluca. The motivation of doing so would have been to obtain “programmable voltage regulators that are used to provide output voltages that can be set to provide the output voltage required” as taught by Doluca (*column 1, lines 25-28*).

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bohorquez (US 5357081) in view of Suzuki (US 4514737) as applied to claim 13, and further in view of Otsuki (US 6145961).

Bohorquez, as modified, discloses the claimed invention as discussed above except wherein the at least one fluid ejection device includes multiple fluid ejection devices.

Otsuki discloses a fluid ejection device including multiple fluid ejection devices, wherein each ejection device ejects different color ink for color printing (*FIG. 6, elements 81-82*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printing system disclosed by Bohorquez, as modified, such as including multiple fluid ejection devices for printing multiple colors as disclosed by Otsuki.

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The motivation of doing so is to provide a printing apparatus that is capable to print multiple colors as taught by Otsuki (*Abstract*).

**(10) Response to Argument**

- In response to the Appellant's arguments regarding to the rejections based on Bohorquez and Suzuki references:

First of all, the Appellant argued that "the level of skill of one "skilled in the art" has not been ascertained". The examiner cites that it was clearly stated in the rejection that the level of skill of one is ascertained as "ordinary".

Next, the Appellant argued that Bohorquez did not teach or suggest that the signal at positive input of element 16 in Figure 3 is an offset voltage. It is the examiner's point of view that even though Bohorquez does not name such voltage as an "offset voltage", such voltage reads on the Appellant's offset voltage based on the similar ways they both are provided and their similar functions to drive printing elements through a feedback amplifier (Bohorquez's element 16, Appellant's elements 106a-n).

In addition, the Appellant asserted that the examiner changed the recited limitations of the claims to a different non-cited limitation. The examiner disagrees with the Appellant's assertion because:

Firstly, the examiner stated in the Office Action "Bohorquez does not disclose wherein the power regulator provides the offset voltage from the internal power supply path voltage", the examiner thus considered the actual claim language and did not change the claim limitation.

Moreover, the examiner has attempted to clarify how the claim limitation was



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interpreted by stating that “In other words, Bohorquez does not disclose wherein the power regulator directly connects to the internal power supply path.”. This interpretation is proper because its scope is fully covered by the scope of the claim limitation. This interpretation is also in light of the Appellant’s disclosure, as shown in Figure 5 that the power regulator includes element 102 directly connected to the internal Vpp supply path (92).

Furthermore, the Appellant’s argued “If a power regulator were directly connected to a power supply path that had voltage Vcc as the Examiner states, then the only teaching that results is that the entire voltage Vcc would be provided, not an offset voltage of Vcc”. The examiner disagrees with this conclusion because while the voltage Vcc is provided to an INPUT of the power regulator by directly connecting to the power supply path, the offset voltage is produced at an OUPUT of the power regulator. Therefore the offset voltage is not the entire voltage Vcc as asserted by the Appellant.

In response to the Appellant’s argument regarding the Suzuki reference, in which the Appellant asserted that “the Examiner is now contradicting his previous position since Suzuki clearly teaches a drive pulse signal p and not an offset voltage as claimed”, the examiner cites that Suzuki was only used to suggest the connection between the power regulator and the internal power supply path. The examiner did not rely upon Suzuki for providing an offset voltage because it is provided by Bohorquez’s power controller/regulator. The examiner, in conclusion, did not contradict his previous position.

Finally, the modification of Bohorquez by Suzuki’s connection between the power regulator/controller and the internal power supply path is proper because it does not render

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Bohorquez's power controller unsatisfactory for its intended purpose or change its principle of operation.

- In regarding to the Appellant's argument referring to the Advisory Action, the examiner believes that he did not withhold material interpretations that form the basis of the rejections until the end of prosecution, because such material interpretation does not form the basis of the rejections. The basis of rejections is formed based on Bohorquez's and Susuki's teaching.

The Appellant also submitted that the dictionary definition and the elaborated definition are improper because they were not taken in light of the present specification nor made in the context of the present claims or specification. The examiner disagrees with the Appellant's argument because the examiner did not read the claims in a vacuum and did interpret the claims in light of the specification in giving them their broadest reasonable interpretation (MPEP 2111.01).

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

LN  
04/24/2006

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**SUPERVISORY PATENT EXAMINER**